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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/810,134

03/26/2004

Anant V. Hegde

31513-703.201

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06/12/2006

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EXAMINER

REIDEL, JESSICA L

ART UNIT

PAPER NUMBER

3766

DATE MAILED: 06/12/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

6

<b>Office Action Summary</b>	<b>Application No.</b> 10/810,134	<b>Applicant(s)</b> HEGDE ET AL.	
	<b>Examiner</b> Jessica L. Reidel	<b>Art Unit</b> 3766	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 03 April 2006.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-26 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 12-18 is/are allowed.
- 6) ☒ Claim(s) 1-11, 19, 20 and 22-26 is/are rejected.
- 7) ☒ Claim(s) 21 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 03 April 2006 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)             | 4) <input type="checkbox"/> Interview Summary (PTO-413)                     |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)    | Paper No(s)/Mail Date. _____  |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date _____   | 6) <input type="checkbox"/> Other: _____                                    |

### **DETAILED ACTION**

1. Acknowledgement is made of Applicant's Amendment, which was received by the Office on April 3, 2006. Claims 1-26 are pending.

#### ***Drawings***

2. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the "second end of the first electroactive polymer actuator being coupled to the second portion of the covering" and the "second end of the second electroactive polymer actuator being coupled to the second portion of the covering" must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet"

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pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

### ***Specification***

3. The specification is objected to as failing to provide proper antecedent basis for the claimed subject matter. See 37 CFR 1.75(d)(1) and MPEP § 608.01(o). Correction of the following is required: support for both the “first and second ends of the first and second electroactive polymer actuators being coupled to the first portion of the covering” is provided, however there is no support for the “second ends of the first and second electroactive polymer actuators being coupled to the second portion of the covering” as claimed in independent Claim 1 and dependant Claims 9 and 22.

### ***Claim Rejections - 35 USC § 112***

4. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

5. Claims 1-11 and 22-25 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

6. Claims 1-11 and 22-25 are rejected under 35 U.S.C. 112, second paragraph, as being incomplete for omitting essential elements, such omission amounting to a gap between the elements. See MPEP § 2172.01. The omitted elements are: “a coupling member including a

first end and a second end, said first end of said coupling member being coupled to said second end of said electroactive polymer actuator, said second end of said coupling member being coupled to said second portion of said covering”. Without this limitation, the cardiac apparatus would not function as disclosed by Applicant’s specification.

***Claim Rejections - 35 USC § 102***

7. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

8. Claims 19 is rejected under 35 U.S.C. 102(e) as being anticipated by Shahinpoor (U.S. 6,464,655) (herein Shahinpoor). Shahinpoor discloses an electrically-controllable multi-fingered resilient heart compression device, read as a cardiac apparatus comprising fingers, collectively read as a covering to at least partially surround a heart (see Shahinpoor Figs. 6a-6d). Shahinpoor further discloses that the fingers of the cardiac apparatus may be encapsulated by bladder-type contourable and inflatable, read as expandable fingers 4 that can be inflated by hydrogen gas and in an alternate embodiment, the fingers of the cardiac apparatus may be encapsulated by electropolymer actuators configured to expand to compress the heart (see Shahinpoor column 7, lines 63-67 and column 8, lines 1-39).

***Claim Rejections - 35 USC § 103***

9. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

10. Claims 20 is rejected under 35 U.S.C. 103(a) as being unpatentable over Shahinpoor. Shahinpoor discloses the claimed invention as discussed above except that it is not disclosed that the electropolymer actuator include a dielectric electrostrictive electroactive polymer. It would have been obvious to one having ordinary skill in the art at the time the invention was made to make electropolymer actuator include a dielectric electrostrictive electroactive polymer, since it has been held to be within the general skill of a worker in the art to select a known material on the basis of its suitability for the intended use as a matter of obvious design choice.

11. Claims 26 is rejected under 35 U.S.C. 103(a) as being unpatentable over Shahinpoor in view of Scorvo. Shahinpoor discloses the claimed invention as discussed above except that it is not specified that the embodiment of the cardiac apparatus employing electropolymer actuators further comprise a sensor configured to detect a cardiac cycle of said heart and a controller electrically coupled to the sensor and to the electroactive polymer actuator, where the controller is configured to actuate the electroactive polymer actuator based on a detected cardiac cycle.

Scorvo, however, discloses a cardiac apparatus 300 comprising a cardiac assist device or jacket, read as a covering 20, including a first portion and a second portion configured to at least partially encircle the heart with the first and second portions adjacent to each other (see Scorvo Abstract, Fig. 9 and page 4, paragraphs 50-51). Scorvo further discloses, that the cardiac

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apparatus 300 comprises a sensor 114 to detect a cardiac cycle of the heart and a controller 308 coupled to the sensor and to the contractile transducers (that comprise electroactive polymer actuators) 102, 104. The controller 308 generates signals to drivers 304, 306 to selectively actuate the actuators 102, 104 according to a treatment regimen or in response to a cardiac parameter or characteristic sensed by sensor 114 (see Scorvo page 5, paragraph 59 and page 6, paragraph 66-68). Scorvo does not expressly disclosed by the sensor and controller are used but it appears that such are used to selectively control the apparatus 300 such that the heart may be appropriately compressed during the right time of the cardiac cycle (i.e. during systole). It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the cardiac apparatus of Shahinpoor in view of Scorvo to comprise a sensor configured to detect a cardiac cycle of said heart and a controller electrically coupled to the sensor and to the electroactive polymer actuator, where the controller is configured to actuate the electroactive polymer actuator based on a detected cardiac cycle in order to allow for compression of the heart at the appropriate time.

***Allowable Subject Matter***

12. Claims 12-18 are allowed.
13. Claim 21 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.
14. Claim 1 would be allowable if rewritten or amended to overcome the rejection(s) under 35 U.S.C. 112, 2nd paragraph, set forth in this Office action.

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15. Claims 2-11 and 22-25 would be allowable if rewritten to overcome the rejection(s) under 35 U.S.C. 112, 2nd paragraph, set forth in this Office action and to include all of the limitations of the base claim and any intervening claims.

### ***Response to Arguments***

16. Applicant's arguments, see pages 8-10, filed April 3, 2006, with respect to Claims 1-18 have been fully considered and are persuasive. The rejections of October 3, 2005 have been withdrawn.

17. Applicant's arguments, see pages 8-10, filed April 3, 2006, with respect to the rejection(s) of claim(s) 19-20 and 26 have been fully considered and are persuasive. Therefore, the rejections have been withdrawn. However, upon further consideration, a new ground(s) of rejection is made in view of Shahinpoor.

### ***Conclusion***

18. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Banik (U.S. 6,749,556) discloses an artificial muscle patch comprising electroactive polymer actuator(s) and a control unit electrically controlling the electroactive polymer actuator(s) to expand or contract the artificial muscle patch where the patch is adapted to be implanted adjacent a patient's heart.




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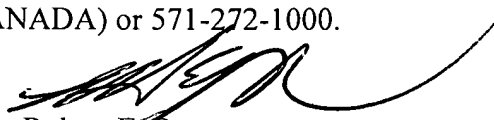
19. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jessica L. Reidel whose telephone number is (571) 272-2129.

The examiner can normally be reached on Mon-Thurs 8:00-5:30, every other Fri 8:00-4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Robert Pezzuto can be reached on (571) 272-6996. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

  
Jessica L. Reidel 06/07/06  
Examiner  
Art Unit 3766

  
Robert E. Pezzuto  
Supervisory Patent Examiner  
Art Unit 3766